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FROM THE EDITORIAL OFFICE

Dear All,

Welcome back for those who attended the Asia-Pacific Chapter meeting in Taipei this September. The program was terrific and well received by the participants. In this issue, we are delighted to have Dr. JI Shin from Korea to share his experience of PD-related peritonitis in children.

We would also like to announce that the ISPD Asia-Pacific Chapter has now a dedicated website (http://www.apc-ispd.org/organization/). Your contributions and input are very much needed.

You are most welcome to distribute this newsletter electronically or in printed form to your colleagues or other people interested. If you or your colleagues want to receive this newsletter directly from our editorial office, please send your e-mail address to: subscription@multi-med.com.

Sincerely,
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OUTCOMES OF PERITONITIS IN CHILDREN ON PERITONEAL DIALYSIS: A 25-YEAR EXPERIENCE AT A SINGLE CENTER IN KOREA

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Peritoneal dialysis (PD) is a preferred dialysis modality in children requiring renal replacement therapy and peritonitis is a common complication of PD. The causative organisms and their antibiotic sensitivities are known to vary by region. To date, however, there have been relatively few published articles on the microbiology and outcomes of PD-related peritonitis in Korean children. Therefore, we recently published an article on outcomes of peritonitis in children on PD at Severance Hospital, Korea [1].

We analyzed the data of 57 PD patients (< 18 years, 38 males and 19 females) from June 1, 1986 to December 31, 2011 [1]. The mean duration of PD was 25±6.3 months (median 8 months, range 1 -240 months). During the study period, there were 56 episodes of peritonitis in 23 of the 57 PD patients (0.43 episodes/patient-year). Fifty one patients received continuous ambulatory PD (CAPD), whereas five did automated PD (APD) and one crossover. The incidence of peritonitis was highest during the years 1996-2000 and decreased after then, but did not differ among age groups (0-5, 6-10, 11-15 and 16-18 years). The episodes of peritonitis were significantly lower in children on APD than in those on CAPD (0.06 vs. 0.49 episodes/patient-year) (p=0.025).

Peritonitis occurred within 6 months of PD initiation in 18 children (78.3%), between 6 and 12 months in 2 (8.7%) and after more than 12 months in 3 (13.0%). The duration between the first and second episode of peritonitis was significantly shorter than that between PD commencement and the first episode of peritonitis (3.1±1.4 vs. 6.8±2.5 months, p=0.01).

Gram-positive bacteria were isolated in 40 episodes of peritonitis (71.4%), gram-negative bacteria in 7 (12.5%), a fungal infection in one (1.8%), and no organism in 8 (14.3%). Among the gram-positive organisms, coagulase-negative staphylococcus (*Staphylococcus epidermidis*) was the most commonly isolated organism (46.4%) and *Pseudomonas aeruginosa* (8.9%) was the most commonly isolated gram-negative organism.

Twenty eight episodes (50.1%) of peritonitis were treated with cefazolin and tobramycin between the years 1986 and 2000 and 20 (36.3%) with cefazolin and ceftazidime between the years 2001 and 2011. In 5 episodes (9.0%) of peritonitis, antibiotics were changed from cefazolin and tobramycin to ceftazidime and vancomycin due to inefficacy or resistance of antibiotics. In 2 episodes (3.6%) of peritonitis, antibiotics were changed from cefazolin and ceftazidime to ceftazidime and vancomycin due to resistance of antibiotics and these two patients were infected with Methicillin-resistant *Staphylococcus aureus* (MRSA), requiring removal of the PD catheter and change to permanent hemodialysis. One episode of fungal peritonitis was initially treated with empiric cefazolin and ceftazidime before diagnosis, but subsequently changed to an antifungal agent (microsomal amphotericin B).

In our study [1], antibiotic sensitivity was different depending on the age of the patient. In children of less than 5 years of age,

gram-positive organisms were 100% sensitive to cefazolin, but this antibiotic sensitivity was decreased in the older groups (66.6% in children of 5-10 years and 42.9% in those of ≥10 years). Also, 100% of the gram-positive organisms (n=40) were sensitive to vancomycin regardless of the age group, and the organisms were sensitive to all antibiotics utilized in children of less than 5 years of age.

Most patients were successfully treated with antibiotics, but two patients underwent removal of the Tenckhoff catheter due to refractory peritonitis despite antibiotic therapy. There were no patient deaths directly attributed to peritonitis.

While recent studies have showed very low rates of peritonitis (0.22–0.26 episodes/patient-year) in children on PD [2, 3], peritonitis still remains the primary cause of PD failure. Our study also demonstrated that PD can be safely performed in children requiring renal replacement therapy [1] and the incidence of peritonitis in our group was comparable with other large pediatric studies [4-6]. The rate of peritonitis in our study (0.43 episodes/patient-year) was similar what was reported from another hospital in Korea (0.45 episodes/patient-year) [7].

The causative organisms for peritonitis and their antibiotic sensitivities are known to vary by region and therefore, the *International Society of Peritoneal Dialysis* (ISPD) recommended the use of antibiotics according to the known conditions of each region [8]. We would concur with the recommendations of the *International Pediatric Peritonitis Registry* (IPPR) [9] that local monitoring of infectious organisms and resistance patterns are most appropriate in guiding empiric treatment. In addition, APD can be considered in a selection of PD modality in children due to low rates of peritonitis. However, further multicenter collaborations are required to study the characteristics of PD-related peritonitis in Asian countries.

References

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9. Warady BA, Schaefer F, Holloway M, Alexander S, Kandert M, Piraino B, et al. Consensus guidelines for the treatment of peritonitis in pediatric patients receiving peritoneal dialysis. *Perit Dial Int* 2000;20:610-624.

LITERATURE UPDATE

New PD Solution – Pooled Analysis

Neutral-pH PD solution, with reduced glucose degradation products (GDPs), have been developed to reduce peritoneal membrane damage, but their clinical benefit remains uncertain. Using data from several medical literature databases, a group of investigators reviewed 20 randomized trials of biocompatible solutions, with a total of 1383 patients. Unfortunately, the quality of studies was generally judged to be poor. For example, 13 studies had greater than a 20% loss to follow-up, and only 3 trials reported adequate concealment of allocation. Pooled analysis show that the use of neutral-pH dialysates with reduced GDPs resulted in larger urine volumes and improved residual renal function after 12 months. However, there was no significant effect on body weight, hospitalization, peritoneal solute transport rate, peritoneal small-solute clearance, peritonitis, technique failure, patient survival, or adverse events.

Comments

Two remarkable facts are highlighted by this study: First, there is little evidence that the new PD solution affects the "hard outcome" of patients (except perhaps, residual renal function). Second, as nephrologists, we need to improve our ability to conduct good quality clinical trials.

1. Cho Y, et al. The impact of neutral-pH peritoneal dialysates with reduced glucose degradation products on clinical outcomes in peritoneal dialysis patients. *Kidney Int* 2013; 84: 969-979.

NEWS FROM THE ISPD

Join the ISPD! Membership benefits of the *International Society for Peritoneal Dialysis* include:

- Print and/or online subscription to *Peritoneal Dialysis International*
- Receipt of the electronic newsletter of your regional chapter if available
- Online access to ISPD Guidelines
- Special registration fees at ISPD Congress, Chapter Meetings and the Annual Dialysis Conference
- Application for ISPD Scholarships and Grants

Please join the ISPD membership at www.ispd.org. There is a category of membership for developing countries (institutional membership) allowing 10 member from same institute to pay at one member cost.

Asian Chapter Scholarship

This is a scholarship to support up to 3 months training in clinical PD for doctors and nurses from the Asia-Pacific region. Deadline for application is twice a year at 30 June or 31 December. The next deadline is 31 December 2014. Details and application procedures can be found under the Regional Chapters – Asia-Pacific Chapter, at the ISPD website.

Upcoming Meetings

Annual Dialysis Conference
February 8-11, 2014
Atlanta, Georgia, USA
Website: http://medicine.missouri.edu/dialysis/

14th Asian Pacific Congress of Nephrology
May 14-17, 2014
Tokyo, Japan
Website: http://www.mtoyou.jp/apcn2014/index.html
Important dates:
Abstract submission deadline: 10 December 2013
Early bird registration deadline: 28 February 2014

51th ERA-EDTA Congress
May 31 – June 3, 2014
Amsterdam, The Netherlands
Website: http://www.era-edta2014.org/en-US/home
Important dates:
Abstract submission deadline: 24 January 2014
Early bird registration deadline: 26 February 2014

15th Congress of the International Society for Peritoneal Dialysis
September 7-10, 2014
Madrid, Spain
Website: www.ispdmadrid2014.com
Important dates:
Abstract submission opening: November 4, 2013
Early Bird Registration opening: September 6, 2013

LITERATURE UPDATE

Glucose-Sparing PD Regimen

Diabetic nephropathy is now the most common cause of dialysis-dependent renal failure in many countries. Traditional glucose-containing PD solutions may exacerbate metabolic abnormalities and increase cardiovascular risk in diabetic patients. In two recent studies, a total of 251 patients were randomized to a low-glucose PD regimen (a combination of dextrose-based, icodextrin and amino acids solutions) or control regimen (dextrose solutions only). After 6 months of follow up, the mean glycated hemoglobin profile improved in the intervention group but remained unchanged in the control group, together with significant improvements in the serum lipid profile. However, deaths and serious adverse events, including several related to extracellular fluid volume expansion, increased in the intervention group.

Comments

The recruitment of these studies had been slow because the diabetic control of many PD patients is not all that bad. It goes without saying that the use of glucose-sparing regimens in PD patients should be accompanied by close monitoring of body fluid status.

1. Li PK, et al. Randomized, controlled trial of glucose-sparing peritoneal dialysis in diabetic patients. *J Am Soc Nephrol* 2013; 24: 1889-1900.

Lymphatic Absorption and Ultrafiltration Failure

In addition to sub-mesothelial neovascularization, it remains controversial whether lymphatic vessels, which remove tissue fluid, cells, and macromolecules, contribute to ultrafiltration failure if PD. Recently, Kinashi et al. reported that the number of lymphatic vessels and the levels of VEGF-C, a mediator of lymphangiogenesis, increase in peritoneum from patients with ultrafiltration failure. Notably, levels of TGF-β1 and VEGF-C correlate with the dialysate-to-plasma ratio of creatinine in PD effluent. The authors conclude that TGF-β1/VEGFC-induced lymphangiogenesis contributes to peritoneal fibrosis.

Comments

This study explores an untouched area of peritoneal physiology. It is interesting to note that in addition to fluid removal, TGF-β1 and VEGF-C correlate with parameters of small solution excretion, suggesting that this pathway also regulates peritoneal transport by mechanisms other than lymphatic generation.

1. Kinashi H, et al. TGF-β1 promotes lymphangiogenesis during peritoneal fibrosis. *J Am Soc Nephrol* 2013; 24: 1627-1642.

2015 ASIAN-PACIFIC CHAPTER MEETING OF THE ISPD

The 2015 Asian-Pacific Chapter Meeting of the ISPD will take place in **EXCO** (Daegu Exhibition and Convention Center), Daegu, South Korea. This is the 7th Meeting as Asian Chapter Meeting (the second meeting as Asian Pacific chapter meeting).

This edition of the APCM-ISPD will feature a highly scientific program and programs that reflect the regional characteristics of the Asian-Pacific area with diverse social networking events tailored to the circumstances of individual participants. Additionally, since Daegu is located in the middle of South Korea, the participants can enjoy the Korean traditional culture, grafted with modern daily lives. The APCM-ISPD 2015 will be held on Thursday September 17 through Saturday September 19, 2015. This is the best time to enjoy the pleasant weather conditions and beautiful natural scenery of Korea. The website will open in March, 2014 and the abstract submission will be open in March, 2015. On behalf of the *Korean Society of Nephrology* and the ISPD, we are pleased to invite you to participate in APCM-ISPD in Daegu, Korea in 2015.

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